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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/755,497	01/05/2001	Michael A. Komara	6785-128	5233

7590 12/22/2003

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EXAMINER

CRAVER, CHARLES R

ART UNIT	PAPER NUMBER
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2682

DATE MAILED: 12/22/2003

4

Please find below and/or attached an Office communication concerning this application or proceeding.

TS

# Office Action Summary

Application No.  
09/755,497

Applicant(s)  
Komara et al

Examiner  
Charles Craver

Art Unit  
2682



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 9-18 is/are rejected.
- 7) ☒ Claim(s) 8 is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on Jan 5, 2001 is/are a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some\* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 2, 3 6) ☐ Other:

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## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-7 and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Wessel et al, US Pat 6,275,685 in view of Nazarathy, US Pat 5,161,044.

**Claim 1:** Wessel discloses a wideband transceiver (col 1 lines 45-55 and 66-col 2 line 3) for a base station (col 5 lines 20-22) in a cellular system which communicates with a number of subscribers, including equalization means comprising

inherently, assigning a number of transmit/receive carriers to the wideband receiver, and

modifying the response of the wideband transceiver using amplitude pre-distortion (col 6 line 35-col 7 line 12), the pre-distorting means using memory (col 7 line 66-col 8 line 8), and thus inherently software.

Wessel fails to disclose flattening the power of the carrier frequencies.

Nazarathy discloses an analogous art, that is, means for modifying the response of a wideband transceiver by using pre-distortion (col 7 lines 49-64), and further using said pre-distortion and filtering to flatten the frequency response power (col 18 lines 37-47).

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Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to add such a feature to Wessel; Wessel discloses the utility of linearizing the transceiver's behavior, while Nazarathy discloses the same utility, adding that flattening the power aids in linearization (col 16 lines 9-29). Adding the flattening of Nazarathy would further thus further linearize the response of the transceiver of Wessel. **Claim 2:** the flattening of the combined invention of Wessel in view of Nazarathy would inherently flatten each carrier and provide an output level for a respective input level. **Claim 3:** Wessel discloses that the pre-distorting means applies coefficients to the wideband signal (col 4 lines 1-9), and that the pre-distortion compensates for the effects of several circuits in the system, including a DAC (col 8 lines 9-32). **Claims 4 and 5:** although Wessel in view of Nazarathy fails to disclose ripple and filter roll-off distortion, one of ordinary skill in the art at the time of the invention would have recognized that such types of distortion may have been present in the output signal of Wessel in view of Nazarathy, and as such would have been a part of the correction signal (Wessel, element 54) and thus compensated for. Note especially that Wessel discloses roll-off-type distortion as a problem, see col 5 lines 61-67. **Claims 6 and 7:** Wessel discloses that the coefficients are determined by taking measurements of the wideband signal automatically (col 9 lines 26-61), which reads an ABRFTT, and is functionally equivalent to making piecemeal measurements of the wideband spectrum. **Claims 9 and 10:** Wessel discloses storing the coefficients in a memory, specifically in a look-up table (col 9 line 62-col 1 line 3), inherently allowing the

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interchangability of transceivers. **Claim 11:** Wessel discloses gain coefficients, which would set gains for the entire spectrum.

3. Claims 12-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Appel, US Pat 6,223,056 in view of Wessel and Nazarathy.

**Claim 12:** Appel discloses a CDMA (wideband) transceiver for a base station in a cellular system which communicates with a number of subscribers, comprising  
receiver (202) coupled to a plurality of digitized receiver signals inherently from A/D conversion, and a transmitter (203) coupled to an analog signal from a multi-channel signal combiner (col 6 lines 4-18), inherently using D/A conversion, including  
a number of DSP's for modifying the response of the wideband transceiver using software amplitude modification (col 6 lines 19-49).

Appel fails to disclose flattening the power of the carrier frequencies using pre-distortion.

Wessel discloses an analogous art, that is, means for modifying the response of a CDMA wideband transceiver for linearity (col 6 line 35-col 7 line 12, col 7 line 66-col 8 line 8), wherein software pre-distortion is preferably utilized to correct the response of the wideband transceiver (col 1 lines 45-65 and col 2 lines 15-20).

Nazarathy discloses an analogous art, that is, means for modifying the response of a wideband transceiver by using pre-distortion (col 7 lines 49-64), and further using said pre-distortion and filtering to flatten the frequency response power (col 18 lines 37-47).

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Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to add such features to Appel; Wessel discloses the utility of linearizing the transceiver's behavior using pre-distortion, while Nazarathy discloses the same utility, adding that flattening the power aids in linearization (col 16 lines 9-29). Adding the flattening of Nazarathy would further thus further linearize the response of the transceiver of Appel. **Claim 13:** although Appel in view of Wessel and Nazarathy fails to disclose ripple and filter roll-off distortion, one of ordinary skill in the art at the time of the invention would have recognized that such types of distortion may have been present in the output signal of Wessel in view of Nazarathy, and as such would have been a part of the correction signal (Wessel, element 54) and thus compensated for. Note especially that Wessel discloses roll-off-type distortion as a problem, see col 5 lines 61-67. **Claim 15:** Wessel discloses that the pre-distorting means applies coefficients to the wideband signal (col 4 lines 1-9), and that the pre-distortion compensates for the effects of several circuits in the system, including a DAC (col 8 lines 9-32). **Claim 15:** Appel further discloses a transceiver processor (215) connected to a memory (220), and Wessel discloses storing the coefficients in a memory, specifically in a look-up table (col 9 line 62-col 1 line 3) and gain coefficients, which would set gains for the entire spectrum. **Claim 16:** to one of ordinary skill in the art at the time of the invention, it would have been an obvious use of the transceiver of Appel in view of Wessel and Nazarathy to apply it to a repeater for the purposes of extending cellular system range.

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**Claim 17:** Appel discloses a CDMA (wideband) transceiver for a base station in a cellular system which communicates with a number of subscribers, comprising transceiving means including

a receiver (202) coupled to a plurality of digitized receiver signals inherently from A/D conversion, and a transmitter (203) coupled to an analog signal from a multi-channel signal combiner (col 6 lines 4-18), inherently using D/A conversion, including

a number of DSP's for modifying the response of the wideband transceiver using software amplitude modification (col 6 lines 19-49).

Appel fails to disclose flattening the power of the carrier frequencies using pre-distortion.

Wessel discloses an analogous art, that is, means for modifying the response of a CDMA wideband transceiver for linearity (col 6 line 35-col 7 line 12, col 7 line 66-col 8 line 8), wherein software pre-distortion is preferably utilized to correct the response of the wideband transceiver (col 1 lines 45-65 and col 2 lines 15-20).

Nazarathy discloses an analogous art, that is, means for modifying the response of a wideband transceiver by using pre-distortion (col 7 lines 49-64), and further using said pre-distortion and filtering to flatten the frequency response power (col 18 lines 37-47).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to add such features to Appel; Wessel discloses the utility of linearizing the transceiver's behavior using pre-distortion, while Nazarathy discloses the same utility, adding that flattening the power aids in linearization (col 16 lines 9-29). Adding the flattening of

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Nazarathy would further thus further linearize the response of the transceiver of Appel. Lastly, given that Appel discloses a cellular system, a number of Base Station transceivers would be inherent. **Claim 18:** to one of ordinary skill in the art at the time of the invention, it would have been an obvious use of the transceiver of Appel in view of Wessel and Nazarathy to apply it to a repeater for the purposes of extending cellular system range.

*Allowable Subject Matter*

4. Claim 8 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. The following is a statement of reasons for the indication of allowable subject matter:

Claim 8 teaches towards a method for flattening output power in a base station wideband transceiver using pre-distortion, wherein ripple and filter roll-off distortion are compensated for by making IF measurements and wideband step-through channel measurements automatically to determine 25 narrowband pre-distortion coefficients for a 5 MHZ IF bandwidth and 300 wideband coefficients for a 60 MHZ RF bandwidth having 200 kHz channels.



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*Conclusion*

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Cyze discusses using a look-up table for a pre-distorting circuit.

Fitzpatrick and Jin discuss pre-distortion circuits.

Aitkenhead and Garcia discuss power envelope modifying.

**7. Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks

Washington, D.C. 20231

**or faxed to:**

(703) 872-9314, (for formal communications intended for entry)

**Or:**

(703) 872-9314 (for informal or draft communications, please label

"PROPOSED" or "DRAFT")

Hand delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington VA, sixth floor (receptionist).

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles Craver whose telephone number is (703) 305-3965.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin, can be reached on (703) 308-6739.

Application/Control Number: 09/755497

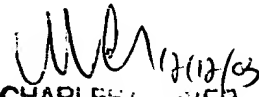
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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-4700.

cc

C. Craver  
December 12, 2003

  
**CHARLES CRAVER**  
**PATENT EXAMINER**